FIRST TERM
WEEKLY LESSON NOTES
WEEK 3

Week Ending: 20-10-2023	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Diversity Of Matter	
Class: B9	**Class Size:**	**Sub Strand:** Living Cells	
Content Standard: B9.1.2.1 Demonstrate knowledge of specialist cells of dicotyledonous plants and humans, their formation and functions for the existence of the plants and humans	**Indicator:** B9.1.2.1.1 Discuss the concepts of specialized cells and how they are formed in dicotyledonous plants and humans		**Lesson:** 1 of 2
Performance Indicator: Learners can discuss the concepts of specialized cells and how they are formed in dicotyledonous plants and humans		**Core Competencies:** DL 5.3: CI 6.8: DL 5.1: CI 6.6:	
References: Science Curriculum Pg. 90			
New words: Specialized Cells, Dicotyledonous, Differentiation, Tissues			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Display a picture of a professional sports team. Ask learners why each player has a specific role or position. Draw an analogy between specialized team players and specialized cells in organisms. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Divide learners into small groups and ask them to brainstorm on what they think "specialized cells" might mean. Each group can share their definitions. Note the recurring ideas on the board to arrive at a class definition. Explain that dicotyledonous plants are a type of plant that starts with two leaves when they sprout. Discuss how these plants grow, their cells become specialized to perform certain functions. Examples include guard cells in the stomata for gas exchange, xylem cells for water transport, and phloem cells for sugar transport. Introduce the concept that humans start as a single cell, which divides and eventually differentiates into all the various cell types in our body. Give examples of human specialized cells such as red blood cells (for oxygen transport), nerve cells (for transmitting signals), and muscle cells (for movement).	Pictures and Charts

	Hand out clay or play dough to the learners. Ask them to shape the clay into a model of a cell. <u>Assessment</u> 1. What are specialized cells? 2. Name one specialized cell in dicotyledonous plants and its function. 3. Name one specialized cell in humans and its function. 4. Why is cell differentiation important in multicellular organisms?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

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Content Standard: B9.1.2.1 Demonstrate knowledge of specialist cells of dicotyledonous plants and humans, their formation and functions for the existence of the plants and humans	**Indicator:** B9.1.2.1.2 Examine the functions of specialized cells in dicotyledonous plants such as epidermal, guard cells, cambium, xylem in relation to the existence of the plants.		**Lesson:** 1 of 2
Performance Indicator: Learners can identify the functions of specialized cells in dicotyledonous plants, such as epidermal cells, guard cells, cambium, and xylem.		**Core Competencies:** DL 5.3: CI 6.8: DL 5.1: CI 6.6:	
References: Science Curriculum Pg. 90			
New words: Epidermal Cells, Guard Cells, Cambium, Xylem			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Display a picture of a big machine or factory, composed of many parts, each with its specific function. Ask learners to think about what would happen if one part stops working. Use this analogy to introduce the idea that plants, like machines, have specialized parts (cells) that ensure the plant functions effectively. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Play a short video clip that gives a close-up view of dicotyledonous plant cells, particularly focusing on epidermal cells, guard cells, cambium, and xylem. Have a discussion on the appearance of each cell type, ensuring that learners can identify each cell by name and appearance. Divide the learners into four groups, assigning each group one of the specialized cell types. Task each group to gather information on the functions of their assigned cell and how it contributes to the overall existence of the plant.	Pictures and Charts

Cell	**Function**
Epidermal cells	• Protection: The primary function of epidermal cells is to protect the plant from water loss, mechanical injury, and infections. • Regulation: Epidermal cells can also regulate gas exchange and water

	transpiration through tiny pores called stomata. • Secretion: Some epidermal cells secrete a waxy layer called the cuticle which acts as a water-resistant barrier, further preventing excessive water loss.
Guard Cells	• Regulation of Stomatal Opening: Guard cells surround each stoma (plural: stomata) on plant leaves and regulate their opening and closing. • Control of Gas Exchange: By adjusting the size of the stomatal pores, guard cells control the exchange of gases (like carbon dioxide and oxygen) between the plant leaves and the environment. • Water Regulation: The opening and closing of stomata also play a critical role in regulating water vapor loss (transpiration) from the plant.
Cambium	• Cell Production: The cambium is a type of meristem, and its primary function is cell production. It is responsible for producing new cells which can become part of the xylem, phloem, or more cambium. • Support and Growth: As the cambium produces cells, it contributes to the thickness (secondary growth) of stems and roots, strengthening the plant and allowing it to transport more nutrients and water.
Xylem	• Water and Nutrient Transport: Xylem's primary function is to transport water and dissolved nutrients from the roots to various parts of the plant. • Support: Xylem cells, once matured, become lignified (filled with lignin), which strengthens the cell walls and provides support to the plant. • Storage: Some xylem cells can also be involved in storing nutrients and water.

After research, each group should prepare a short presentation to share with the class.

Facilitate a class discussion on the importance of each cell type in the overall health and survival of dicotyledonous plants.

<u>Assessment</u>

1. What is the main function of guard cells in dicotyledonous plants?
2. Why are epidermal cells important for a plant?

	3. How does the cambium contribute to a plant's growth? 4. Describe the role of xylem in dicotyledonous plants.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	